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ABSTRACT

Canonical variate analysis was used to examine the relationship between student ratings of instructional effectiveness and the psychological press of the classroom environment. A sample of 29 classes at Syracuse University, Syracuse, New York, completed two instruments which required approximately 50 minutes of class time. One significant canonical correlation was found between student ratings and the environment index. The construct was labeled Academic Structure and was characterized by classical notions of academia, i.e., intellectual challenge, seriousness, and relevancy of tasks. The author suggests that perhaps faculty responsiblilty for student ratings may have to be altered because students' judgements of instructional effectiveness appear to be influenced by the group of students with whom they are associated. (Author)

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STUDENT RATINGS OF INSTRUCTIONAL EFFECTIVENESS AND THEIR RELATIONSHIP TO THE COLLEGE CLASSROOM ENVIRONMENT

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BIOGRAPHICAL RESUME

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STUDENT RATINGS OF INSTRUCTIONAL EFFECTIVENESS AND THEIR RELATIONSHIP TO THE COLLEGE CLASSROOM ENVIRONMENT

This study examined the relationship between the psychological press of the college classroom environment and student ratings of instructional effectiveness. This relationship was examined to explore the possibility that student's judgment of instructional effectiveness may be influenced by the group of students with whom he is associated.

Research on college environments has compared institutions and has also looked within one institution's academic programs (Stern, 1970; Pace, 1963; Astin and Holland, 1961; Pervin, 1967), yet minimal work has focused on the environment of the college classroom and its effect on instruction (Hall, 1970; Astin, 1965). Recently Walker and Stern (1973) reported the development of a new instrument, the Classroom Environment Index (CEI), "designed to measure the psychological press of the classroom." (p. i) The CEI is similar in conception to the Activities Index and the College Characterisitics Index (Stern, 1970) and was used in this study as a measure of the psychological environment of the college classroom.

Student evaluation of collegiate instruction was chosen as the measure of instruction for this study. Costin, Greenough, and Menges (1971) stated, "A review of empirical studies indicates that students' ratings can provide reliable and valid information on the quality of courses and instruction." (p. 530) The Instructional Rating Survey (IRS) developed by Stern and Richman (1973) was used in this study as a measure of student ratings of instructional effectiveness.

METHOD

Instruments:

The IRS is a factor analytically developed instrument (Richman, in preparation) that consists of 30 items to which the student is asked to respond on a 5 point scale, 1=exceptionally/outstanding to 5=unsatisfactory. The survey is designed to measure students' perception of the quality of instruction and reports three factors. They are: instructor warmth; course academic and intellectual content; and student work inputs -readings, examinations, papers, etc.

The CEI (Stern, 1971) consists of 30 scales of ten items each with forms available for elementary through college classrooms. The respondent is asked to respond true if he thinks the statement is generally true or characterisitc of the classroom; is something which occurs or might occur; or is the way others in the classroom tend to act or feel. If these descriptors do not apply, the respondent is to mark the statement false. The CEI reports 6 first order factors; they are: humanistic-intellectual climate; group intellectual life; achievement standards; personal dignity; orderliness; and non-science. Walker and Stern (1973) reported the developmental statistics for the instrument.

Testing Procedures:

The testing procedure for this study consisted of two parts. During a class period chosen by the respective faculty member during Spring semester, 1974 students completed the CEI. This testing required approximately 30 minutes of class time. Because of the length of the CEI (300 items), each student completed one half of the items. Walberg and Welch (1967) referred to this procedure as "randomized data collection". It is used to increase the number of instruments and/or to decrease the amount of testing time for each individual. The CEI was scored by the Psychological Research Center, Syracuse University.

Faculty members who agreed to participate in the study were also asked to administer the IRS as the second part of the testing plan. At the end of each semester, the Psychological Research Center makes the IRS available to all faculty members and guarantees confidentiality of results. The IRS takes approximately 10 minutes to administer. Each faculty member's identity has been carefully coded in order to preserve confidentiality. The Psychological Research Center scored the IRS.

Description of Sample:

The sample for this study was determined by those instructors who agreed to participate by responding to a letter of request. Forty to 50 classes were desired for statistical power, yet only 29 completed the instruments. The sample reflects instructors willing to give up 40-50 minutes of class time.

The 29 classes reported an average enrollment of 38.6 students per class. The average attendance per class for the completion of the CEI equaled 18.5 students. Because each student was required to complete only one half of the CEI, the class results are based on an average of 9.3 completed answer sheets per classroom.

Fifteen of the classes were at the undergraduate level and 14 were graduate. The 29 classes ranged in student composition from 13% female to 99% female (mean = 63%). The percent of students for which the class was in their respective major ranged from 15-99% (mean = 66%). The percent of students for which the class was required ranged from 0-96% (mean = 50%). Ten classes were in the School of Education, 7 in Arts and Sciences, 5 in Nursing, 3 in Social Work and the remaining classes were in four different schools.

The descriptive statistics for the IRS and CEI are presented in Tables 1 and 2, respectively. Cronbach's alpha reliability coefficients were calculated for the IRS and CEI scores. The IRS results were: 1=.97, 2=.96, and 3=.94. The CEI results were: 1=.97, 2=.98, 3=.96, 4=.90, 5=.95 and 6=.98. The correlation matrix between the IRS factors and the CEI factors is presented in Table 3.

TABLE 1

DESCRIPTIVE STATISTICS FOR NORMALIZED* SCORES FOR THE INSTRUCTIONAL RATING SURVEY (IRS) BASED UPON 29 CASES

VARIABLE		DESCRIPTIVE STATISTICS		
NUMBER	LABEL	MEAN	STD. DEV.	RANGE
IRS-1	Warmth	.47	.27	.02 - .89
IRS-2	Content	.51	.27	.09 - .89
IRS-3	Student Work	.52	.25	.07 - .93

*Normalized score: Range from .01 - .99, average score = .50. It is a normalized percentile score, Norm group used was All University Norms for Syracuse University, based upon 227 classes.

TABLE 2

DESCRIPTIVE STATISTICS FOR STANDARDIZED* SCORES FOR THE CLASSROOM ENVIRONMENT INDEX (CEI) BASED UPON 29 CASES

VARIABLE		DESCRIPTIVE STATISTICS		
Number	Label	Mean	Std. Dev.	Range
CEI-1	Humanistic-Intellectual	-0.72	.32	-1.27- 0.01
CEI-2	Group Intellectual Life	-0.44	.50	-1.53- 0.45
CEI-3	Achievement Standards	-0.13	.62	-1.29- 1.31
CEI-4	Personal Dignity	-0.88	.32	-1.44- 0.10
CEI-5	Orderliness	1.56	.50	0.50- 2.57
CEI-6	Non-science	0.91	.92	-0.32- 3.27

*Standard score: Mean = 0, Sigma = 2.

TABLE 3

PEARSON CORRELATION COEFFICIENTS FOR IRS AND CEI SCORES
BASED UPON 29 CASES

Variables		Correlations								
		IRS			CEI					
		1	2	3	1	2	3	4	5	6
IRS-1	Warmth	0	71	70	-10	53	33	08	40	-13
IRS-2	Content		0	63	09	55	40	11	51	04
IRS-3	Student Work			0	21	48	30	04	17	-18
CEI-1	Hum. Intell.				0	23	-10	43	-08	-06
CEI-2	Gp. Intell. Life					0	38	25	43	-25
CEI-3	Ach. Standards						0	-26	23	21
CEI-4	Personal Dignity							0	-07	00
CEI-5	Orderliness								0	-30
CEI-6	Non-Science									0

Decimal points not printed.
Correlations greater than 36, p. = .05
Correlations greater than 46, p = .01

RESULTS

Canonical correlations were computed between the six factors of the CEI and the three factors of the IRS using the classroom as the unit of analysis (Holzemer, 1975). These correlations were tested for significance with the Chi-square approximation to Wilks' lambda (Bock and Haggard, 1968). Canonical loadings were then plotted in order to allow as meaningful an interpretation as possible (Darlinton, et al, 1973). The canonical variate analysis resulted in one significant canonical correlation (See Table 4).

TABLE 4

CANONICAL CORRELATIONS FOR INSTRUCTIONAL RATING SURVEY WITH CLASSROOM ENVIRONMENT INDEX (N = 29)

Number of Canonical Variate Sets	Eigen-values	Canonical Correlations	Wilk's Lambda	Chi-Square	Degrees of Freedom	Sign.[1] Level
1	0.52	0.72	0.29	29.665	18	.025
2	0.26	0.51	0.61	11.865	10	NS[2]
3	0.17	0.41	0.83	4.526	4	NS

Canonical Coefficients

For Dependent Variables	CANVAR 1	CANVAR 2	CANVAR 3
IRS-1 Warmth	0.49	-0.72	-1.34
IRS-2 Content	0.93	0.08	1.13
IRS-3 Student Work	-0.59	1.33	-0.12
For Independent Variables			
CEI-1 Hum. Intell.	-0.23	0.74	0.78
CEI-2 Gp. Intell. Life	0.42	0.45	-0.50
CEI-3 Ach. Standards	0.14	0.33	-0.10
CEI-4 Personal Dignity	0.24	-0.36	-0.19
CEI-5 Orderliness	0.69	-0.36	0.56
CEI-6 Non-Science	0.38	-0.30	0.69

[1]Significant level of .05 was chosen for the CVA analysis.
[2]NS = not significant.

The canonical coefficients, which represent the relative contribution of each variable to the canonical correlation, were plotted to visualize the construct (See Fig. 1). This construct, CANVAR 1, represents the relationship between instruction and environment.

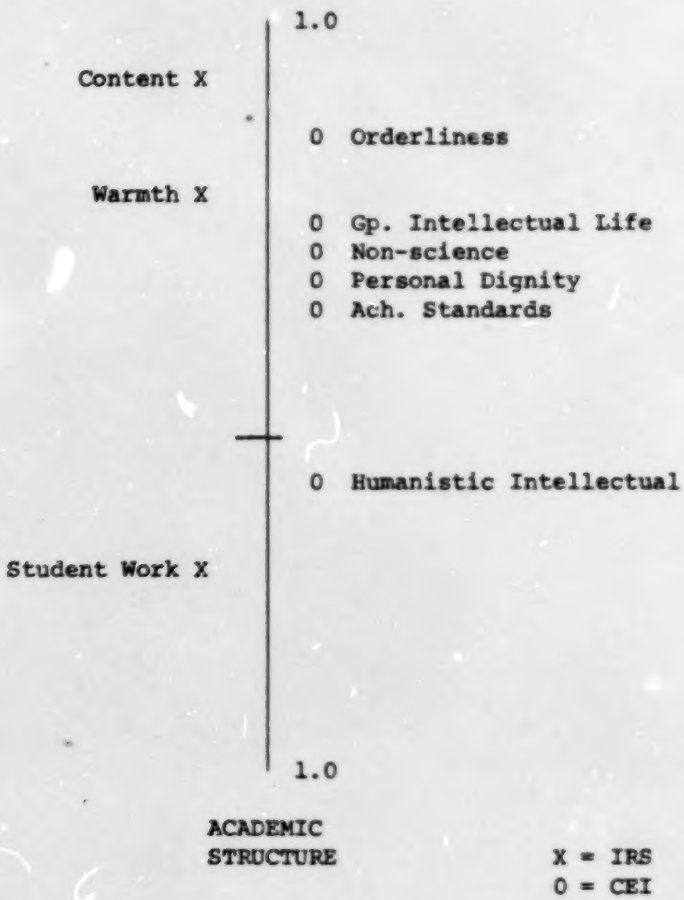

Figure 1. Canonical Loadings for Instructional Rating Survey and Classroom Environment Index for One Significant Canonical Correlation (CANVAR 1).

In order to interpret this construct, an examination was made of the canonical coefficients which had the highest loadings. High positive loadings were noted for IRS-Content and CEI - Orderliness; a high negative loading was noted for IRS-Student Work. This construct, therefore, can be characterized as follows: IRS-Content refers to students' perceptions of the breadth of the instructor's knowledge, the intellectual challenge of the course, and the adequacy of the lectures and class discussions; CEI-Orderliness refers to the degree of caution, seriousness, orderliness, and austerity in the environment; and IRS-Student Work (negative loadings) refers to students' perceptions of the relevance, fairness and quantity of readings, texts, papers, examinations, etc.

Perhaps this construct can be labeled academic structure. The relationship between environment and instruction appears to encompass the idea of a meaningful organization or structure that supports classical notions of academia, i.e., intellectual challenge, seriousness, and relevancy of tasks.

DISCUSSION

The focus of this study was to determine if a relationship existed between measures of instruction and of environment. Student ratings of instructional effectiveness were chosen as a measure of instruction and students' perceptions of the psychological press of the classroom were chosen as a measure of the environment. One significant canonical correlation was found between these sets of variables. Given the limitation of the study, it is appropriate to conclude that a relationship does exist between instruction and environment as defined in this study. The construct which explains this relationship was labeled academic structure, and was characterized by intellectual challenge, seriousness, and relevancy of tasks.

This study suggests that the extent to which faculty are responsible for student ratings may have to be reconsidered since student ratings appear to be related to the psychological press of the classroom environment, an environment for which an instructor does not have full capacity to alter.

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